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EXAMINER

TRAN, KHANH C

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/621,398

Applicant(s)

MARKO ET AL.

Examiner

Khanh Tran

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3-4, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansour et al. U.S. Patent 6,353,637 in view of Kumar 5,748,677.

Regarding claim 6, Mansour et al. invention is directed to methods and apparatus for multi-stream transmission and/or reception of information in IBOC digital audio broadcasting and other applications.

FIG. 2 is a block diagram of a transmitter 201 for transmitting multiple bit streams containing audio information through sub-bands of a frequency band in accordance with Mansour et al. teachings. In column 5 lines 2-15, the transmitter 201 includes an audio coder 203 to generate C-stream, E<sub>1</sub>-stream and E<sub>2</sub>-stream.

Mansour et al. does not explicitly teach transmitting a first broadcast comprising program content and a second broadcast substantially the same program content as set forth in the application claim.

In column 9 lines 20-30, because *Mansour et al. further suggests it will be appreciated that one may further subdivide, e.g., subband 103 equally for transmission of duplicate versions of the C-stream*, or equivalent C-streams, to

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afford additional robustness to the core audio information, therefore, one of ordinary skill in the art would have been motivated to implement Mansour et al. suggestions for additional robustness to the core audio information.

Referring back to FIG. 2, transmitter 201 further includes interleavers 227a 227b and 227c for interleaving selected symbols from coder 221a 221b and 221c. In column 9 lines 55-65, Mansour et al. teaches the channel coding (e.g. from coder 221a 221b and 221c) and *interleaving techniques apply to different subbands may not be identical.*

Mansour et al. does not expressly teach the first interleaving pattern and second interleaving pattern being operable to delay transmission as set forth in the application claim.

Kumar discusses in US Patent 5,748,677 that interleaving is a method of time-diversity, which is sometimes used in mobile communication systems to combat burst errors, where there are localized time intervals with high error rates; see column 4 lines 10-20.

In column 2 lines 35-45, because Mansour et al. suggests an increase bit stream time diversity by introducing delay between bit streams in different bands and/or within the same band, it would have been obvious for one of ordinary skill in the art at the time the invention was made that Mansour et al. interleaving techniques can be modified to implement the time diversity by introducing delay between bit streams in different bands and/or within the same band in the presence of fading; see also column 2 lines 65-67, Mansour et al. invention.

Regarding claim 1, FIG. 3 is a block diagram of a **receiver 301 for recovering the audio information transmitted using the transmitter (of FIG. 2), which has been relied on in claim 6 rejection**. In column 6 lines 45-67, Mansour et al. further teaches a receiver 301 receives signals transmitted by transmitter 201 through subbands 103, 105 and 107, respectively. The received signals corresponding to the C-stream, E<sub>1</sub>-stream and E<sub>2</sub>-stream are processed by **receive circuits 307a, 307b and 307c, which perform inverse functions to above-described transmit circuits 235a, 235b and 235c, respectively**. As shown in FIG. 3, also in column 8 lines 45-55, receiver 301 further includes delay element 335 is employed to compensate for the delay imparted to such a stream portion in traversing the de-interleaver and intervening decoders.

Regarding claim 3, in column 7 line 65 via column 8 lines 10, Mansour et al. further teaches that embedded audio decoder 330 performs the inverse function to embedded audio coder 203 described above and is capable of blending the received C-stream, E<sub>1</sub>-stream and E<sub>2</sub>-stream to recover an audio signal corresponding to a(t). Because embedded audio coder 203 is capable of blending the received C-stream, E<sub>1</sub>-stream and E<sub>2</sub>-stream to recover an audio signal corresponding to a(t), one of ordinary skill in the art would have recognized that embedded audio coder 203 performs equivalent combining step as claimed in the application claim.

Regarding claim 4, Mansour et al. does not teach embedded audio coder 203 employs Viterbi decoding as claimed in the application claim.

Nevertheless, in column 7 lines 40-60, Mansour et al. further teaches trellis decoder 317b in a conventional manner determines what the most likely transmitted symbols are in accordance with the Viterbi algorithm, thereby recovering the  $E_1$ -stream incorporating RS check symbols therein, i.e., the RS coded  $E_1$ -stream. Decoders 317a 317c would determines what the most likely transmitted symbols are in accordance with the Viterbi algorithm also. Because decoders 317a 317b 317c are part of the decoding process, one of ordinary skill in the art would have recognized that decoders 317a 317b 317c and embedded audio coder 203 would constitute a decoding part for determining what the most likely transmitted symbols are in accordance with the Viterbi algorithm and combining the outputs as claimed.

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mansour et al. U.S. Patent 6,353,637 and Kumar 5,748,677 as applied to claim 1 above, and further in view of Lynch et al. U.S. Patent 6,314,127 B1.

Regarding claim 2, Mansour et al. does not teach the delay element 335 comprising a buffer shift register as claimed in the application claim.

Lynch et al. teachings are directed to a system for enhancing signal reception comprises delay devices coupled to a combiner. The delay devices are adapted to delay respective input signals by corresponding offset delay durations to produce time-staggered delayed signals with respect to one another. Shown in FIG. 1, also in column

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4 lines 10-35, Lynch et al. teaches the time delay device 36 comprises a memory (e.g., first-in, first out shift register) for delaying the digital signal. Because time delay device would prevent the received signals from overlapping as disclosed in column 4 lines 45-50 in Lynch et al. invention and because a memory (e.g., first-in, first out shift register) would further facilitate the delaying process, therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made that Mansour et al. delay element can be modified to further implement the memory (e.g., first-in, first out shift register) as taught by Lynch et al..

### ***Allowable Subject Matter***

3. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lou et al. U.S. Patent 6,430,401 B1 discloses "Technique For Effectively Communicating Multiple Digital Representations Of A Signal".

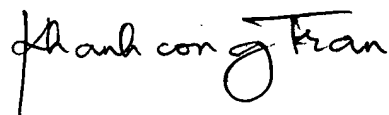
Moon et al. U.S. Patent 6,671,266 B1 discloses "Device And Method For Controlling Powers Of Orthogonal Channel And Quasi-Orthogonal Channel In CDMA Communication System".

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

  
KHANH TRAN  
Primary Examiner